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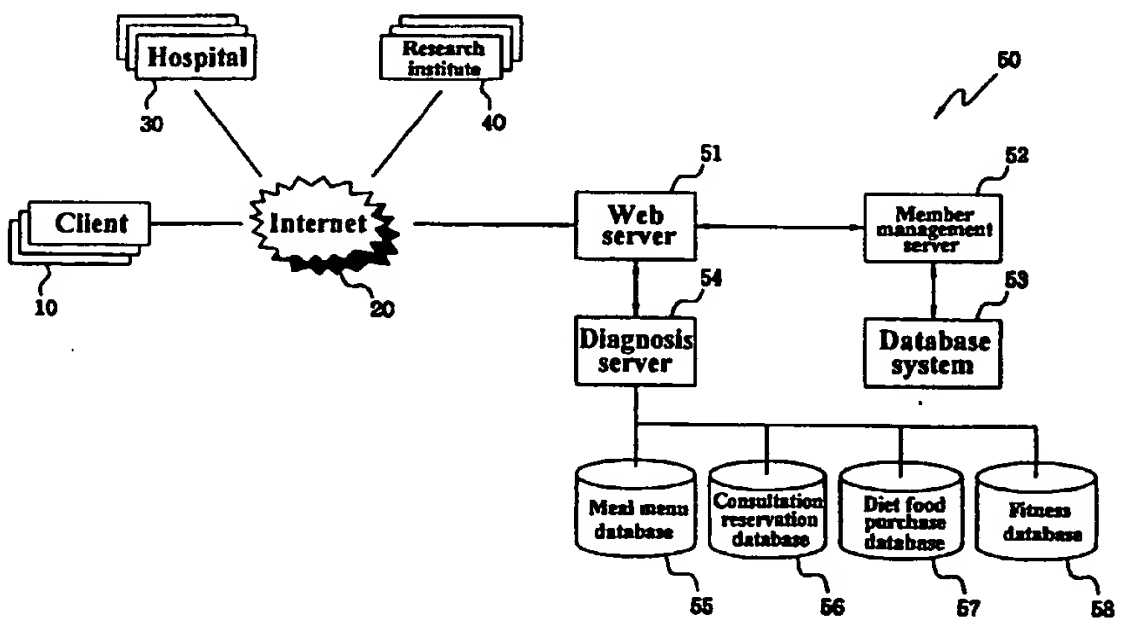
(54) **Title:** METHOD AND SYSTEM FOR HEALTH CARE ADMINISTRATION THROUGH THE INTERNET



(57) **Abstract:** Disclosed is a method and system for health care administration through the Internet. In the system, health care administration is performed by receiving and storing basic information about the new member; receiving and storing any change about a joined member; receiving information about the blood levels of cholesterol and glucose, and obesity indices of the member from an affiliated hospital and genetic information related to cholesterol, obesity and diabetes of the member from an affiliated research institute; executing a cholesterol, obesity and diabetes control program to check a change in the basic information and the genetic information by making reference to diagnosis particulars; offering to the member optimal ways of controlling blood levels of cholesterol and glucose, and obesity, to the member through dietary treatment, drug therapy, diet food ingestion, and exercise; and executing a diagnosis program corresponding to the choice of the member from the offered ways.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

METHOD AND SYSTEM FOR HEALTH CARE ADMINISTRATION THROUGH THE INTERNET

TECHNICAL FIELD

The present invention relates to a method for health care administration through the Internet and a system therefor. More particularly, the present invention relates to a method and system for health care administration, in which various and proper prescriptions are provided to Internet users on the basis of their blood levels of cholesterol, glucose and lipids, which are main causes of diseases of the cardiovascular system.

BACKGROUND OF THE INVENTION

The great advance of networks based on the Internet has and continues to bring about previously unimaginable innovations in various fields, especially, in information and commerce fields. Actually, an infinite quantity of information is available on the Internet and almost all of the products produced in the world can be traded on the Internet without the limitation of borderlines.

Also, many of the works which have been conducted in the off-line world, that is, in real space, can be fulfilled with ease and convenience in virtual spaces created on-line, that is, the Internet. For instance, various medical services, including diagnoses and therapies, are being provided on-line.

Recent official statistics show that cardiovascular diseases, especially, coronary artery diseases, are main causes of death in adults and have increased drastically in the last decade. Among various risk factors causing diseases in the cardiovascular system, high blood cholesterol is found to be the most important. High blood cholesterol levels are associated with increased incidence of coronary heart disease. Reducing levels of blood cholesterol helps to decrease a person's risk for heart disease. Nowadays, people recognize blood cholesterol levels as an important index indicating their health state.

In the United States, average blood cholesterol is measured to be 200 mg/dl in about 52 % of the adult population, and 240 mg/dl in about 20 % of the adult population. As much as about 45 % of the U.S. adult population has blood cholesterol levels higher than 200 mg/dl, defined as borderline high levels. In Korea, about 11 % of the adult population in the age bracket of 35 to 60 has blood cholesterol levels of 240 mg/dl or higher.

According to academic reports, persons with a blood cholesterol level of 240 mg/dl or higher have three fold higher mortality rate from coronary heart disease than persons with a blood cholesterol level of 200 mg/dl. It is also reported that 10% reduction in a person's blood cholesterol level can reduce deaths from coronary heart disease by 50% at age 50.

Cholesterols in blood are, for the most part, synthesized according to metabolic ways of the body, and, in small part, contributed from foods. There are suggested various methods for controlling blood cholesterol levels.

First, various drugs, including statin based drugs, are developed to control the synthesis of cholesterol in vivo. However, care must be taken when prescribing these drugs because they have side effects.

Helpful in reducing blood cholesterol levels is a dietary treatment in which foods with high cholesterol are avoided. The dietary treatment requires advice of specialists to ensure that the ingestion of cholesterol is restrained, but not other nutrients.

Additionally, diet foods are used which restrain the absorption of cholesterol into the body while allowing foods to be ingested as usual. For example, when foods rich in vegetable sterols are ingested, the sterols interfere competitively with the absorption of cholesterol into the blood, so that cholesterol-rich foods may be taken without concern for an increase in blood cholesterol level.

Fitness programs suited to individuals may be a useful alternative for reducing blood cholesterol levels. Also, it is effective to seek advice from specialists to choose the most suitable fitness regimen.

With the recent advance of biotechnologies, information about genes associated with cholesterol is becoming known. This genetic information is useful for controlling blood cholesterol levels.

It is not easy for common persons to choose cholesterol control methods fitted to themselves, without consultation with specialists. Some people do not choose control methods suitable for themselves until they try all possible alternatives. From a national point of view, such trials may cause misuse or abuse of drugs as well as high social costs. Individually, not only may a fatal problem be caused because an optimal prescription is not taken at an optimal time, but also economic disadvantages are suffered.

DISCLOSURE OF THE INVENTION

It is an object of the present invention to overcome the problems described above and to provide a method and system for health care administration through the Internet, whereby members of the system can be provided with various proper prescriptions on the basis of their blood levels of cholesterol, glucose and lipids.

In one of aspects of the present invention, there is provided a method for health care administration using an Internet system, comprising: (i) a member management step comprising: providing an Internet user with a health care administration web site; identifying whether or not the Internet user is a member of the Internet system in the health care administration web site; assigning an identification number and a password to a newly joining member and then receiving basic information about the new member, and storing the basic information in a data base system; identifying the identification number and password of a joined member, asking if there is any change in the basic information, receiving the change if entered, and dietary habits from the member, and storing the data inputted by the member in the data base system; and receiving information about the blood levels of cholesterol and glucose and obesity indices of the member from an affiliated hospital and information about genes related to cholesterol, obesity and diabetes of the member from an affiliated research

institute; and (ii) a diagnosis step comprising: executing a cholesterol, obesity and diabetes control program to check a change in the basic information, the current dietary habits, the blood levels of cholesterol and glucose, obesity-related indices, and the genetic information about cholesterol levels, obesity and diabetes by making reference to diagnosis particulars; searching for an example most similar to the member from the data stored in the data base system on the basis of the diagnosis particulars checked, and offering to the member optimal ways of controlling blood levels of cholesterol and glucose, and obesity to the member through dietary treatment, drug therapy, diet food ingestion, and exercise, with reference to the example; and executing a diagnosis program corresponding to the choice of the member from the offered ways.

In accordance with another aspect of the present invention, there is provided a system for health care administration using the Internet, comprising: a client able to connect personally to the Internet through a client program; the Internet through which data are sent to or received from remote places; a health care administration web site for providing various prescriptions for web site members on the basis of data of blood cholesterol levels, weight-related indices, serum glucose levels, and their genetic information; a plurality of hospitals for examining samples of the members and sending their blood cholesterol levels, serum glucose levels and weight-related indices to the web site; and a plurality of research institutes for examining blood samples of members and sending their genetic information about blood cholesterol, obesity and diabetes to the web site.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic block diagram showing a structure of a system for health care administration through the Internet, in accordance with the present invention.

Figs. 2 to 5 are flow charts illustrating methods of the health care administration using the Internet, in accordance with the present invention.

BEST MODES FOR CARRYING OUT THE INVENTION

The application of the preferred embodiments of the present invention is best understood with reference to the accompanying drawings, wherein like reference numerals are used for like and corresponding parts, respectively.

Referring to Fig. 1, there is a block diagram schematically illustrating the composition of a system for health care administration using the Internet in accordance with the present invention.

As seen in the structural diagram of Fig. 1, the system is composed of clients 10 who connect personally to the Internet 20 through a client program installed in their personal computers or Internet TVs at home or offices or other places; the Internet 20, a network through which data are sent to or received from remote places; a health care administration web site 50 for providing various prescriptions to members on the basis of data of blood cholesterol levels, weight-related indices, such as obesity index, body mass index, etc., serum glucose levels, and their genetic information, the members joining the web site 50 by use of the Internet 20; a plurality of hospitals 30, associated with the web site 50, for examining samples of the members and sending their blood cholesterol levels, serum glucose levels and weight-related indices, such as obesity index, body mass index, etc., to the web site 5; and a plurality of research institutes 40 for examining blood samples of members and sending the genetic information about blood cholesterol, obesity and diabetes to the web site 50.

The health care administration web site 50 consists of a web server 51 for providing members with various services, including information about web contents, service menus, medical information, notices, advertisements, and information about associated hospitals and research institutes, through web pages; a member management server 52 for providing new and existing members with cholesterol, obesity and diabetes control programs for managing various personal information inputted by members; a database system 53, connected to the member management server 52, for storing and managing the personal and basic information which has been updated, research information, information about

cholesterol, obesity and diabetes, information about medical treatment, consultation reservation and purchase of diet foods, and medical information; a diagnosis server 54 for receiving personal and basic information and dietary habit data from members, information about blood levels of cholesterol and glucose and obesity indices of members from the hospitals 30, and genetic information related to cholesterol levels, obesity and diabetes of members from the research institutes 40, searching for an example similar to a member to be diagnosed, from the database system 53, and providing the member with proper prescriptions consisting of dietary treatment, drug administration, diet food ingestion, and exercise; a meal menu database 55, associated with the diagnosis server 54, for receiving information about preferred foods and meal practices of breakfast, lunch and supper from members and storing data of dietary treatments for providing such meal menus desirable for the members who want dietary treatments as to contain balanced nutrients with as little cholesterol, fats, and sugar as possible; a consultation reservation database 56, associated with the diagnosis server 54, for storing consultation reservation information about the approval of the transmission of personal information to doctors and about consultation reservation time for the members who wants a drug therapy; an diet food purchase database 57, associated with the diagnosis server 54, for storing information about diet foods and experienced members and providing the information for members who want diet food prescriptions; and a fitness database 58, associated with the diagnosis server 54, for storing information about athletic therapies and providing athletic therapies suitable for members who want exercise, in consideration of their physical states and conditions.

A detailed description will be given of the method for health care administration, in association with Figs. 2 to 5.

With reference to Fig. 2, there is a flow chart illustrating a process of managing members' information in conjunction with the member management server 52 and the data base system 53, in accordance with the present invention.

As illustrated in Fig. 2, when an Internet user connects to the health care administration web site 50 (S11), the web server 51 presents a login procedure to

identify whether or not the user is a member (S12), with the aid of the member management server 52.

The user, if not a member, is invited to become a member through a joining procedure in which an identification number and a password are registered (S13). Then, the new member inputs his or her basic information which may influence blood cholesterol levels, weight-related indices and serum glucose levels, that is, information about amounts of daily smoking and drinking; business fields engaged at present and past times, stress, current social and domestic environments, family disease history, drugs used habitually at past times, and present health conditions, and the inputted data is stored in the database system 53 (S14).

In the case that the user is identified as a member through the identification number and password by the member management server 52 (S15), the member management server 51 inquires whether the basic information stored in the data base system 53 is changed: if changed, the basic information inputting step (S14) is conducted; and if no changes have occurred on the basic information, the member is guided into a dietary information inputting step (S17) and the dietary data inputted is stored in the data base system 53.

Then, member's blood samples, whether taken in the hospital 30, the research institute 40, or other designated sites, are examined for blood levels of cholesterol, lipids, and glucose in the hospital 30, and relevant genetic information is examined in the research institute 40, and the data thus obtained is transmitted to the member management server 52 and stored in the data base system 53 (S18).

With reference to Fig. 3, there is a flow chart illustrating a diagnosis service conducted in conjunction with the diagnosis server 54, in accordance with the present invention.

The diagnosis service starts with the selection of the diagnosis service icon presented on the web page by a member connecting to the health care administration web site 50 (S21). As shown in the flow chart of Fig. 3, the diagnosis server 54 executes, in connection with the member management server 52, the cholesterol, obesity and diabetes control program to check changes in the

member's information, including the basic information, the current dietary habits, the blood levels of cholesterol and glucose, obesity-related indices, and the genetic information relating to cholesterol, obesity and diabetes, as well as to confirm the identification number and password of the member, by making reference to diagnosis particulars (S22).

After confirmation of the diagnosis particulars, the diagnosis server 54 searches for the most similar examples to the member from the data stored in the data base system 54 through the member management server 52 (S23) and suggests optimal ways of controlling blood levels of cholesterol and glucose, and obesity, to the member, with reference to the examples (S24).

After identifying whether the member selects one of the suggested ways of controlling blood levels of cholesterol and glucose, and obesity, that is, any one of dietary treatment, drug therapy, ingestion of diet foods, and exercise (S25), the diagnosis server 54 executes a program corresponding to the selected control way to provide the advice for the member (S26).

Where the member selects the dietary treatment from the ways of controlling blood levels of cholesterol and glucose, and obesity, the diagnosis server 54 receives the information about preferred foods and dietary habits of the member, reads from the meal information data base 55 a meal menu desirable to the member, that is, a meal menu containing balanced nutrients with as little cholesterol, fats, and glucose as possible, and displays the desirable menu on the monitor.

Where the member selects the drug therapy from among the suggested ways for controlling blood levels of cholesterol and glucose and obesity, the advice is provided with the diagnosis server 54 playing a pivotal role, as shown in Fig. 4. First, the diagnosis server 54 asks whether or not the member wishes to consult a doctor (S31). If the member wants to receive medical advice from a doctor, then the diagnosis server 54 further asks whether the member will provide personal information and health care administration data to the doctor (S32). If the member agrees to the information provision, the personal information of the member stored in the data base system 53 is transmitted to the hospital 30 (S33).

Then, possible consultation reservation times are offered on the monitor (S34) to the member, and a consultation reservation time selected is stored in the consultation reservation database 56 and simultaneously transmitted to the hospital 30 (S35).

Also, if the member agrees to the information provision, the diagnosis server 54 displays possible consultation reservation times on the monitor (S34) and a consultation reservation time selected is stored in the consultation reservation database 56 and simultaneously transmitted to the hospital 30 (S35).

Turning now to Fig. 5, there is illustrated a process for controlling blood levels of cholesterol and glucose, and obesity through the ingestion of diet foods. Where the member presses the icon of diet food ingestion, the diagnosis server 54 displays menu selections, kinds and costs of suitable diet foods from the diet food purchase database 57 onto a display (S41) and asks whether or not the member whishes to buy diet foods (S42). After the choice to purchase diet foods, the diagnosis server 54 receives data regarding kinds and quantities of diet foods (S43).

After completion of the input of kinds and quantities of diet foods, the diagnosis server 54 offers payment methods through, for example, use of credit cards or cyber money, Internet banking, telebanking, e-banking, and other on-line banking, and asks the place to which the diet foods are to be delivered. Once the information is inputted, the diagnosis server 54 confirms the purchase specification from the member and stores the purchase data in the diet food purchase database 57 (S45).

In the case that the member selects an exercise therapy for controlling blood levels of cholesterol and glucose, and obesity, the diagnosis server 54 receives data of body condition and preferred activities and outputs athletic therapies suitable for the member from the fitness database 58 onto a display.

On the basis of the data stored in the data base system, that is, the information about blood cholesterol levels, weight-related indices, serum glucose levels, and genetic information related to cholesterol, obesity and diabetes, and the basic information of members, the system for health care administration using the

Internet in accordance with the present invention can offer various and proper prescriptions to members.

INDUSTRIAL APPLICABILITY

The system of the present invention, as described hereinbefore, suggests various and optimal prescriptions for controlling blood levels of cholesterol and glucose and weight-related indices, on the basis of numerous examples stored in the data base system, so that people, if gaining access to the system of the present invention, can protect their health against cardiovascular diseases which are caused mainly by high blood cholesterol levels, obesity indices and blood glucose levels.

The present invention has been described in an illustrative manner, and it is to be understood that the terminology used is intended to be in the nature of description rather than of limitation. Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, it is to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

CLAIMS

1. A method for health care administration using an Internet system, comprising:

(i) a member management step comprising:

providing an Internet user with a health care administration web site;

identifying whether or not the Internet user is a member of the Internet system in the health care administration web site;

assigning an identification number and a password to a newly joining member and then receiving basic information about the new member, and storing the basic information in a database system;

identifying the identification number and password of a joined member, asking if there is any change in the basic information, receiving the change if entered, and dietary habits from the member, and storing the data inputted from the member in the data base system; and

receiving information about the blood levels of cholesterol and glucose, and obesity indices, of the member from an affiliated hospital and genetic information related to cholesterol, obesity and diabetes of the member from an affiliated research institute; and

(ii) a diagnosis step comprising:

executing a cholesterol, obesity and diabetes control program to check a change in the basic information, the current dietary habits, the blood levels of cholesterol and glucose, obesity-related indices, and the genetic information related to cholesterol levels, obesity, and diabetes by making reference to diagnosis particulars;

searching for an example most similar to the member from the data stored in the data base system on the basis of the diagnosis particulars checked, and offering to the member optimal ways of controlling blood levels of cholesterol and glucose, and obesity, through dietary treatment, drug therapy, diet food ingestion, and exercise, with reference to the example; and

executing a diagnosis program corresponding to the choice of the member from the offered ways.

2. The method as set forth in claim 1, wherein the basic information includes amounts of daily smoking and drinking, business fields engaged at present and past times, stress, current social and domestic environments, family disease history, drugs used habitually at past times, and present diseases.

3. The method as set forth in claim 1, wherein, in the case that the member selects the dietary treatment from among the ways for controlling blood levels of cholesterol and glucose and obesity, the diagnosis program is executed in such a way that it receives information about preferred foods and dietary habits of the member and displays on a monitor such a meal menu desirable for the member as to contain balanced nutrients with as little cholesterol, fats, and sugar as possible.

4. The method as set forth in claim 1, wherein, in the case that the member selects the drug therapy from among the ways for controlling blood levels of cholesterol and glucose and obesity, the diagnosis program comprises the steps of: asking whether or not the member wishes to consult a doctor; asking whether the member will provide personal information and health care administration data to the doctor if the member wishes to receive medical advice from a doctor; transmitting the personal information of member stored in the data base system to the hospital if the member agrees with the information provision; and offering possible consultation reservation times on the monitor to the member, storing a

selected consultation reservation time in a consultation reservation database and transmitting the time to the hospital.

5. The method as set forth in claim 1, wherein, in the case that the member selects the diet food ingestion from among the ways for controlling blood levels of cholesterol and glucose, and obesity, the diagnosis program comprises the steps of: displaying menu selections, kinds and costs of suitable diet foods from an diet food purchase database on a display; asking whether or not the member wishes buy diet foods; receiving data regarding kinds and quantities of the diet foods after the members input their decision to purchase diet foods; receiving data regarding one of payment methods; confirming the purchase specifications after receipt of the information about a delivery place; and storing the purchase data in an diet food purchase database.

6. The method as set forth in claim 1, wherein, in the case that the member selects exercise from among the ways for controlling blood levels of cholesterol and glucose, and obesity, the diagnosis program comprises the steps of: receiving data of body condition and preferred activities; and outputting athletic therapies suitable for the member from a fitness database onto a display.

7. A system for health care administration using the Internet, comprising:

a client able to connect personally to the Internet through a client program;

the Internet through which data are sent to or received from remote places;

a health care administration web site for providing various prescriptions for web site members on the basis of data of blood cholesterol levels, weight-related indices, serum glucose levels, and their genetic information;

plurality of hospitals for examining samples of the members and sending their blood cholesterol levels, serum glucose levels and weight-related indices to the web site; and

a plurality of research institutes for examining blood samples of members and sending their genetic information related to blood cholesterol levels, obesity and diabetes to the web site.

8. The system as set forth in claim 7, wherein the health care administration web site comprises:

a web server for providing members with various services, including information about web contents, service menus, medical information, notices, advertisements, and information about associated hospitals and research institutes, through web pages;

a member management server for providing members with cholesterol, obesity and diabetes control programs for managing various personal and basic information inputted by members;

a database system, connected to the member management server, for storing and managing updated personal and basic information, research information, information about cholesterol, obesity and diabetes, information about medical treatment, consultation reservation and purchase of diet foods, and medical information;

a diagnosis server for receiving personal and basic information and dietary habit data from members, information about blood levels of cholesterol and glucose and obesity indices of members from the hospitals, and genetic information related to cholesterol levels, obesity and diabetes of members from the research institutes, searching the database system for an example similar to a member to be diagnosed, and providing the member with proper prescriptions consisting of dietary treatment, drug administration, diet food ingestion, and exercise;

a meal menu database, associated with the diagnosis server, for storing data of dietary treatments to be prescribed for members;

a consultation reservation database, associated with the diagnosis server, for storing consultation reservation information about the approval of the transmission of personal information to the hospitals or research

institutes and about consultation reservation time for the members who wants a drug therapy;

a diet food purchase database, associated with the diagnosis server, for storing information about diet foods and experienced members and providing the information for members who want diet food ingestion prescriptions; and

a fitness database, associated with the diagnosis server, for storing information about athletic therapies and providing athletic therapies suitable for members who want exercise, in consideration of their physical states and conditions.

Fig. 1

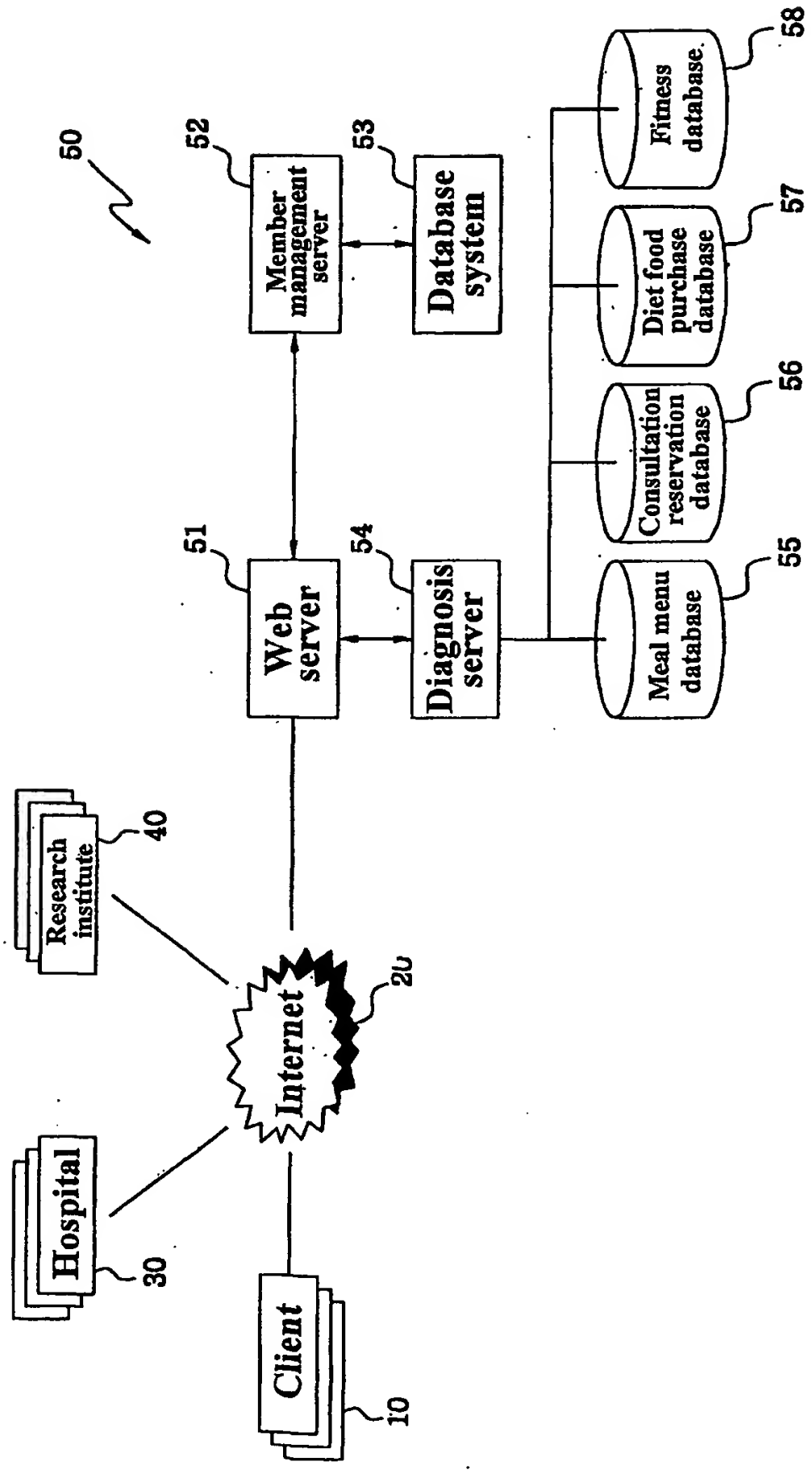

50
52
Member management server
53
Database system
58
Fitness database
57
Diet food purchase database
56
Consultation reservation database
55
Meal menu database
51
Web server
54
Diagnosis server
40
Research institute
20
Internet
30
Hospital
10
Client

Fig. 2

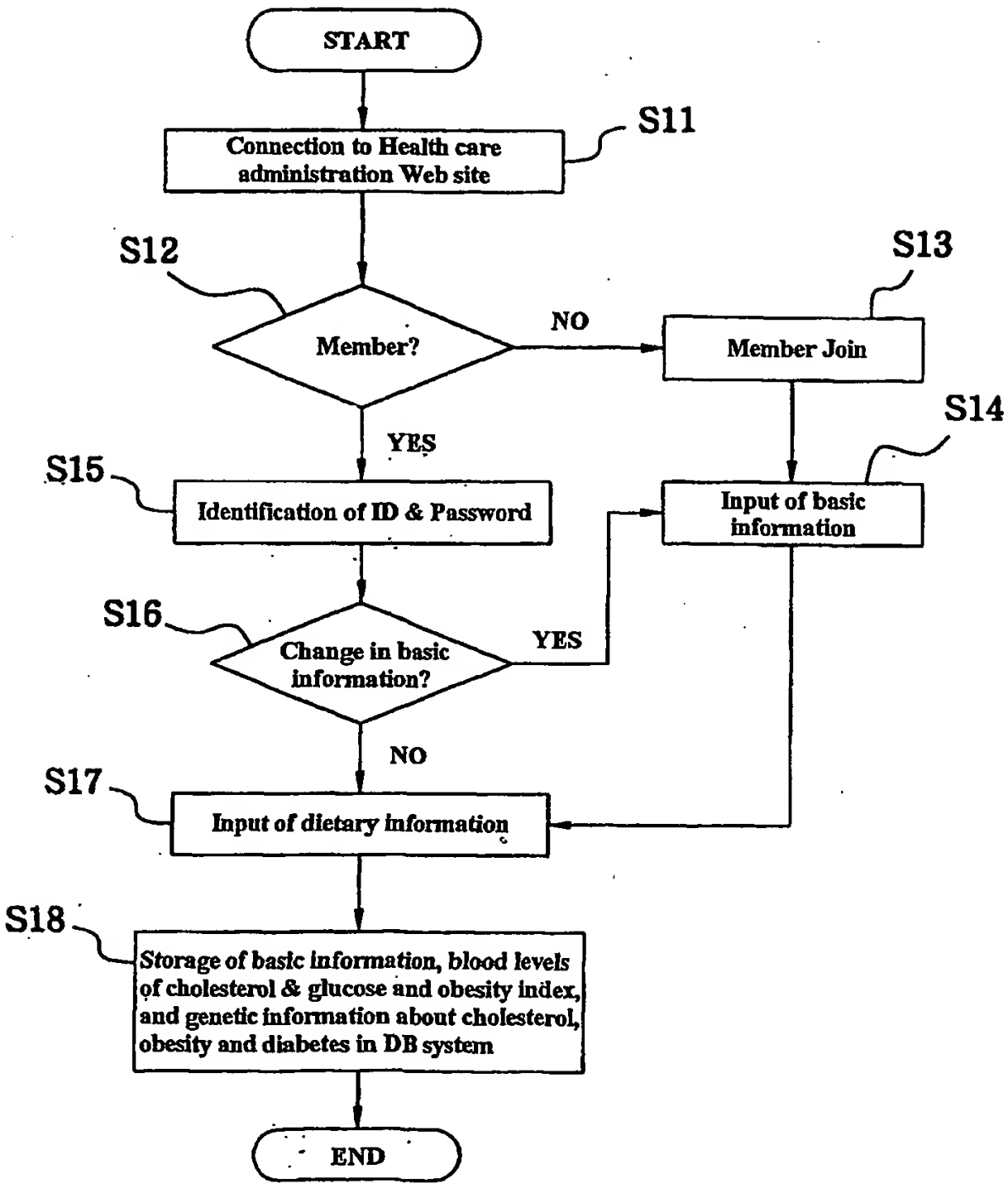

START
S11
Connection to Health care administration Web site
S12
Member?
NO
S13
Member Join
S14
Input of basic information
YES
S15
Identification of ID & Password
S16
Change in basic information?
YES
NO
S17
Input of dietary information
S18
Storage of basic information, blood levels of cholesterol & glucose and obesity index, and genetic information about cholesterol, obesity and diabetes in DB system
END

Fig. 3

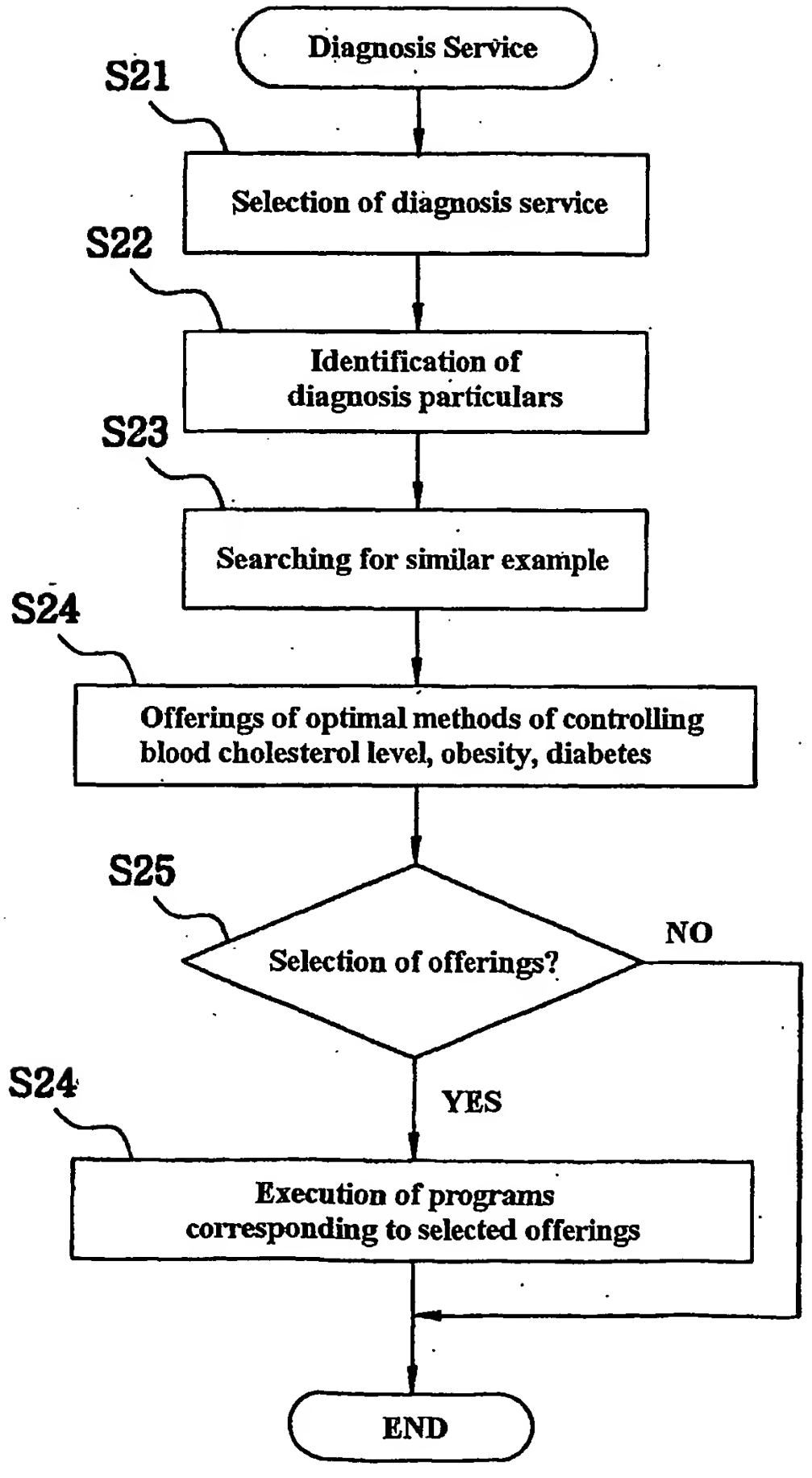

Diagnosis Service
S21
Selection of diagnosis service
S22
Identification of diagnosis particulars
S23
Searching for similar example
S24
Offerings of optimal methods of controlling blood cholesterol level, obesity, diabetes
S25
Selection of offerings?
NO
YES
S24
Execution of programs corresponding to selected offerings
END

Fig. 4

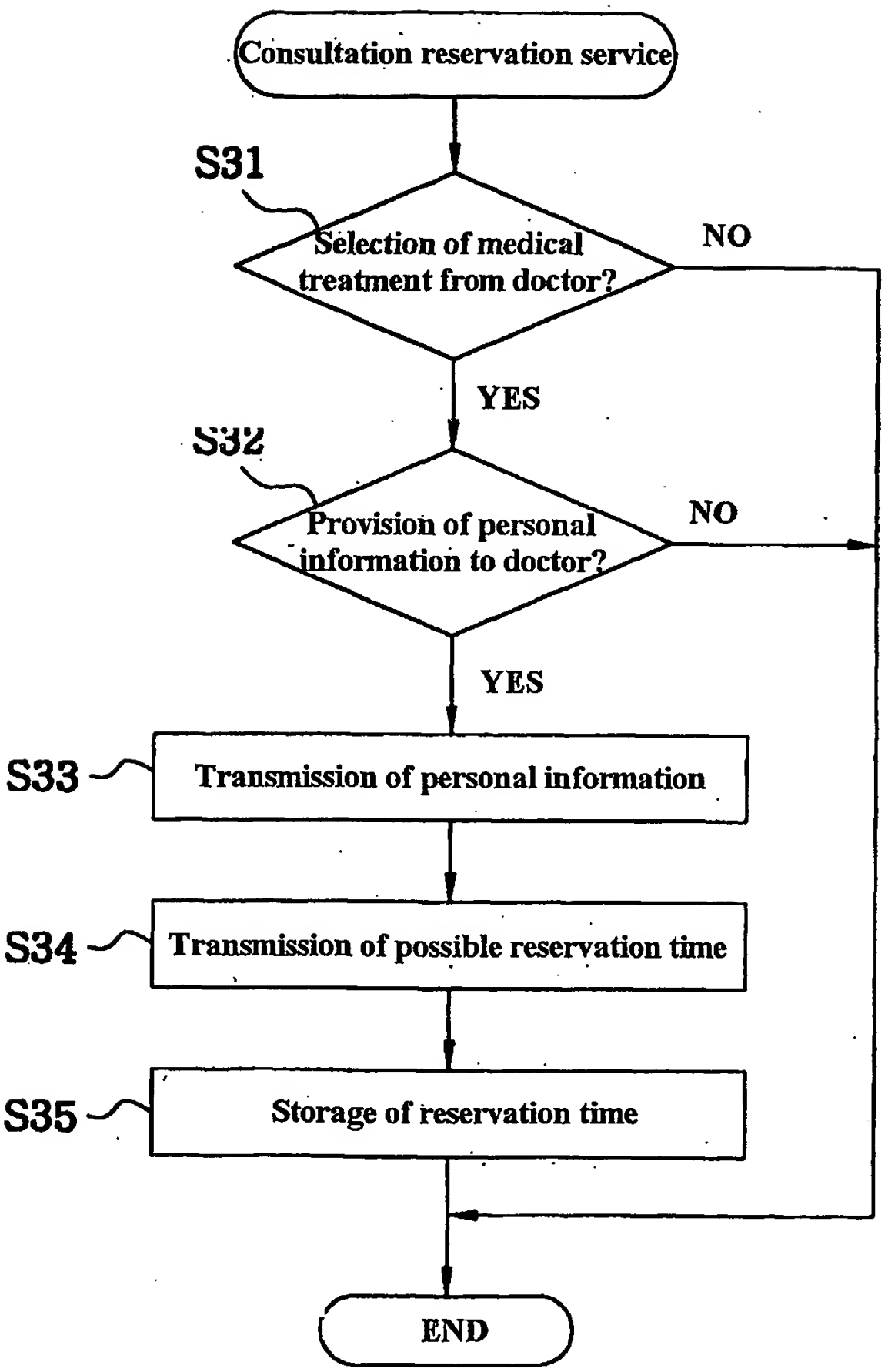
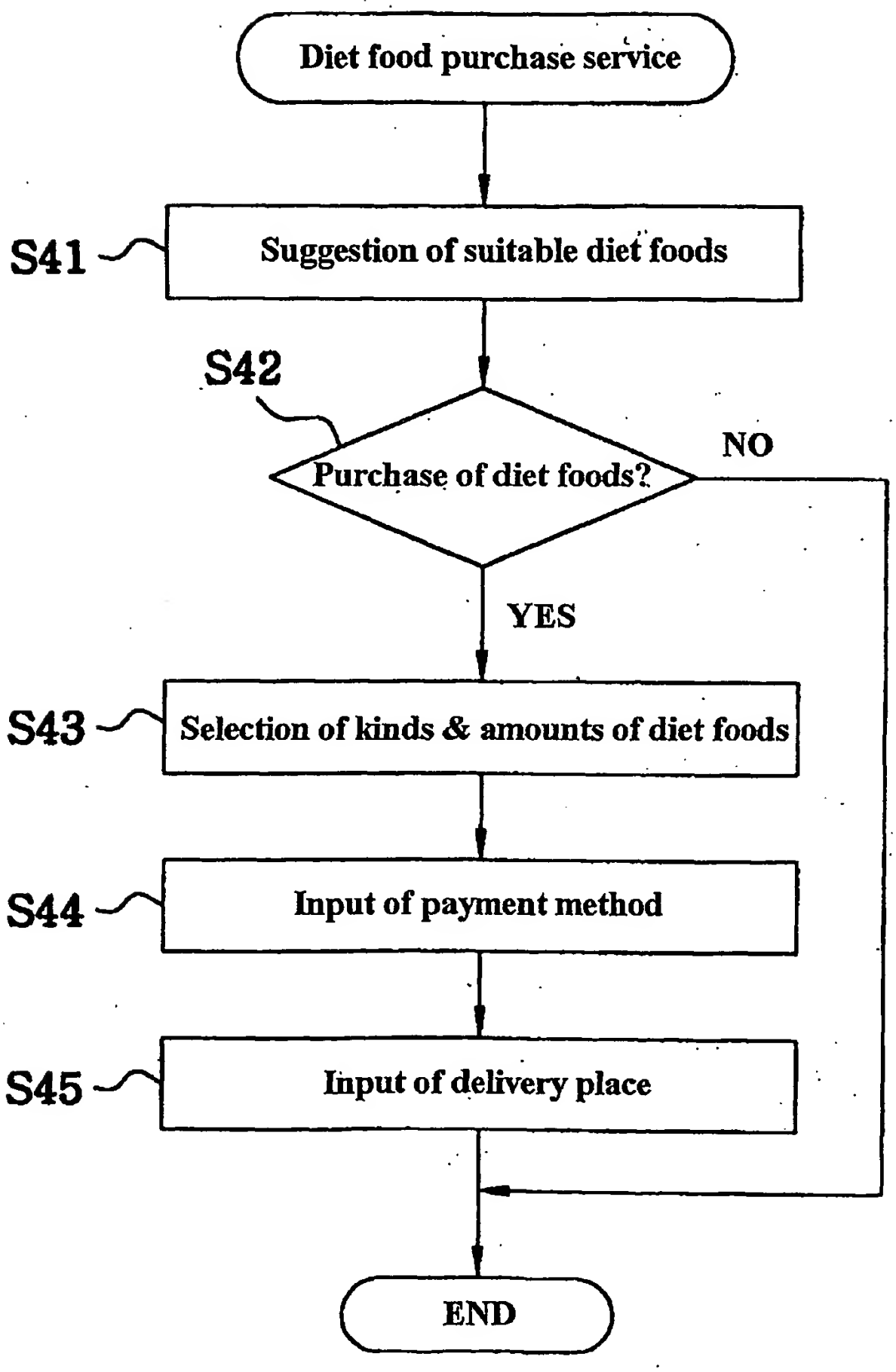

Consultation reservation service
S31
Selection of medical treatment from doctor?
NO
YES
S32
Provision of personal information to doctor?
NO
YES
S33
Transmission of personal information
S34
Transmission of possible reservation time
S35
Storage of reservation time
END

Fig. 5


Diet food purchase service
S41
Suggestion of suitable diet foods
S42
Purchase of diet foods?
NO
YES
S43
Selection of kinds & amounts of diet foods
S44
Input of payment method
S45
Input of delivery place
END

INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR02/00607

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 G06F 19/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 15/00,17/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean patents and applications for inventions since 1975
Korean Utility models and applications for utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, PAJ, IEEE/IEE Electronic Library(since 1988) "HEALTH","DIABETES","DIAGNOSIS"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US5542420 A(Goldman et al.) 6 AUG 1996 SEE ABSTRACT ;FIG. 1-3 ; CLAIMS	1-8
Y	US5845255 A(Mayaud) 1 DEC 1998 SEE ABSTRACT ; FIG. 1 ; CLAIMS	1-8
A	US6014631 A(Teagarden et al.) 11 JAN 2000 SEE ABSTRACT ; CLAIMS	1-8
A	JP10-177611 A(Futsito CO.) 30 JUN 1998 SEE ABSTRACT ; CLAIMS	1-8

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

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